Research Funding, Patent Search Training and Technology Transfer: a collaboration

This report focuses on the results of collaboration between three different university departments to create, teach and evaluate the benefits of a joint patent training series, as well as looking at the future directions this collaboration will take. The end result is the beginning of a cohesive joint IP/patent education program to raise awareness of the path from academic research to potential commercialization of the research.

The Institution and Its Mission

Upon ascending to the throne of Saudi Arabia, King Abdullah put into motion his vision of a university that "shall be a beacon for peace, hope, and reconciliation and shall serve the people of the Kingdom and benefit all the peoples of the world." In 2007, the groundbreaking ceremony for King Abdullah University of Science and Technology took place. By 2008, the founding University President, Choon Fong Shih, was named. On September 23, 2009, the inauguration ceremony for KAUST took place (http://www.kaust.edu.sa/about-kaust.html).

The mission of King Abdullah University of Science and Technology (KAUST) is to advance "science and technology through distinctive and collaborative research integrated with graduate research. We are a catalyst for innovation, economic development and social prosperity in Saudi Arabia and the world… We strive to enhance the welfare of society with a special focus on four areas of global significance – food, water, energy and the environment" (http://www.kaust.edu.sa/vision.html).

The University has an FTE of 1000 and is divided into three divisions: Computer, Electrical and Mathematical Sciences and Engineering (CEMSE), Physical Sciences and Engineering (PSE), and Biological and Environmental Sciences and Engineering (BESE). There are also 11 Research Centers, and 8 Core Labs to support academic research.

Why collaborate and why patents?

Four words—demographic change and (un)employment.

Murphy (2012) writes: "Approximately 37 percent of the Saudi population is below the age of 14. Those under age 25 account for around 51 percent of the population, and when those under 29 are included, young people amount to two-thirds of the kingdom's population." Murphy (2012) also mentions that in 2009, the unemployment figure for 15-24 years olds was 30%.

The 2014 World Bank figure for total unemployment for 15-24 years olds is 29.5% (http://data.worldbank.org/indicator/SL.UEM.1524.ZS).

One of its goals of KAUST the diversification of the Saudi economy, not only to replace the eventual decline in oil revenue but to create good jobs for the growing population of young Saudis. In other words, to be a technology incubator much like MIT, Cambridge or other universities whose research has generated new industries and employment opportunities.

There is a strong focus at the university on developing entrepreneurial ideas and commercializing research to help with the creation of new employment opportunities. In the academic world, however, there is often a lack of understanding of how to take research beyond the lab or classroom and use it in generating new industries and products. This is changing, as witnessed by the growth of Entrepreneurship programs at universities and colleges. These programs, however, are often affiliated with the Business programs with a decided focus on business students rather than on students with a degree in technology or science.

At KAUST, we want our students and researchers to have a well-rounded education that includes an understanding of intellectual property (IP), specifically the "research to patent" process for several reasons. It will raise the awareness of our academic community to the resources available, it will provide an understanding of the research to patent process, and most importantly, it will facilitate the selection and adoption of research into patentable resources that will hopefully provide new employment opportunities for young Saudis.

The University Library provides electronic resources and introductory patent search training skills. However, the patent training classes offered by the University Library are only one step in a process that faculty and students need when starting or taking their research to the next level. During the past several years, three different departments provided training programs specific to their area. However, these offerings were not coordinated and while useful, provided an incomplete picture of the entire research to patent process.

At the end of 2012 our patent trainer/subject specialist had just left and I became the default patent trainer. I had no background in patents or patent training and started learning as much as possible about the world of patents and patent resources. In 2014, I met with Dr. Sami Bashir from Technology Transfer Office (TTO), a department of Economic Development (ED), to evaluate the needs and priorities for patent training and patent resources. From this meeting, it became clear that there was definite need to educate our users on the research to patent process. We initially conceived a program that would be held between the library and the TTO. However, our plans were postponed due to changes in management at the TTO.

I continued to offer an Introduction to Patent Searching and through one of these classes, met Dr. Jane Payumo, from the Office of Sponsored Research (OSR). She works with researchers on the pre-grant funding process. Her past experience has shown her the value of searching the patent literature during the initial phase of a grant application. She wants her researchers to take advantage of the resources available. During 2014, I worked with my contacts in OSR and TTO to evaluate new patent search databases that would best meet our community needs.

By 2015, the organizations changes had settled down and I met with representatives of the two major stakeholders in the patent arena, the OSR and the TTO, to develop a patent training program to meet the needs of researchers. As we talked we could see that that the patent process was neither cohesive nor comprehensive. The resulting discussion led us to collaborate on creating a workshop series that benefit the researcher's information needs and each of our departments as well.

Collaborating Departments

The Office of Sponsored Research (OSR) supports research at KAUST from ideas to impact through grants and research funding. It works with KAUST researchers to develop internal/campus research projects, or with best-in-class global collaborators. The Competitive Research Funds unit employs a global peer review process to discern which ideas are the most meritorious and strategic, and hence warrant investment of KAUST resources (http://www.kaust.edu.sa/research-support.html#rc1).

Economic Development has the goal of being the "region's premier platform for business development engagement" by 2020. In partnership with the academic divisions and research centers, along with the Saudi government and global investment community, ED works to "identify and develop new, profitable, and sustainable business opportunities and services that leverage the University's facilities, properties, and community" (http://www.kaust.edu.sa/business-development.html). The TTO is part of ED and is primarily responsible for working with the research community guide potential inventions through the patenting process.

The University Library is a born digital library with over 310,000 e-book titles, and 50,000 online journals, popular magazines through Zinio and worldwide newspaper coverage through PressReader. In addition there is a small collection of print books, including a special collection on the Red Sea, along with popular print magazines and newspapers. In 2011, the University Library won the American Institute of Architecture/ALA Library Building Award (http://www.kaust.library.edu.sa).

The Collaboration

The OSR provides funding to researchers who have demonstrated that their ideas have merit with potential applications, and their focus was to educate researchers about the potential intellectual property that the research may produce, and to encourage research in areas with the potential of commercialization. Dr. Jason Schrum, Lead Integrative Activities and Dr. Jane Payumo, Specialist, Integrative Activities are my two OSR collaborators.

The OSR's focus on patent education starts before and during the grant proposal process. Among the proposals they receive, they consider proposals that may have commercial possibilities and not just pure research. The issue they ran up against over and over is the lack of awareness or understanding of IP. Researchers are focused on their research and not the possibilities of commercialization. Their goals are to increase understanding and awareness of researchers for the commercialization potential of their research, in particular what has potential and what does not. This benefits the researcher by writing a stronger justification for funding. A proposal that delineates the gaps in research with potential to commercialize helps the university see the potential in someone's research.

The TTO works with researchers who are at the point of needing IP protection. Often though, researchers are unaware of how to protect their potentially patentable research and at what point they need to seek protection of their work. Dr. Sami Bashir, Manager, Technology Transfer has been a major driver of our collaboration because he is often the recipient of the "Uh-oh" IP protection issues that arise. The other member of our TTO collaborators is Darin Oelkers, Senior Technology Portfolio Manager.

The TTO's focus on patent education is to increase knowledge and awareness of the patent process and the steps that need to be taken to preserve inventor rights while balancing out the need to share the results of research. Again, there is a need to educate researchers on IP as well as the steps to take to protect not only the current research but also extend the protection to future research milestones. The other area of patent education TTO wants to promote is understanding patent claims to discover indicators of (existing) patent strength and quality. Since the researcher understands his/her research in depth, this knowledge helps both TTO and the researcher to focus in on the areas of research that can be patented without duplicating or violating already patented IP.

The Workshops

In the first of the series of three 2 hour workshops, the Lead Integrative Specialist from the OSR, Dr. Jason Schrum, and the Manager of TTO, Dr. Sami Bashir, each presented on an overview of Intellectual Property and the patenting process respectively.

Dr. Schrum's presentation was the foundation lecture, focused on defining and explaining what IP is, why it is important, what is considered patentable, what is not, the difference between an assignee and an inventor and the definition of who is legally considered an inventor. For example, under international patent law, a co-author on an academic publication is not automatically considered an inventor. Later in his presentation, Dr. Schrum outlined the steps to take if a researcher thinks his/her works needs protection and to think about the issues involved with public disclosure of the research. This affects researchers because this would include presentation of the material through academic papers, conferences, even posting on Facebook. Premature public disclosure can actually reduce or eliminate patent rights.

Dr. Bashir's presentation focused specifically on how the TTO works and the help they provide through the use of several examples of patents that have been through the process at KAUST. His presentation also built on the issues of premature presentation previously discussed by Dr. Schrum.

The second set of workshops of the series focused on introductory patent search skills and tools, how to expand a literature search to include the information found in patents, and how this kind of research

will improve not only the literature search but the research itself. In my session, I started with a review of basic search tools and techniques, followed by an introduction to the various subscribed resources available for patent research with exercises for hands on practice. I presented our new patent database, PatBase Express, and the Derwent Innovations Index.

Dr. Jane Payumo, Integration Specialist from OSR, focused on the free patent databases (USPTO, EPO, etc.) available to search and the pros and cons of each one of these resources. She also talked about how and why to incorporate these resources in a literature review and the parts of a patent.

The final workshop was presented by Darrin Oelkers, CLP, MPA, and Senior Technology Portfolio Manager of the TTO. The third session built on the first two workshop series by focusing in on how to evaluate a patent's quality, how to find and "read" the patent to find the critical point(s) of the claim(s) being made, and free tools that will assist in evaluating the "intellectual space" around the claim(s) that will help focus and direct current and future research.

Participant Feedback

The participant feedback also affirmed that this type of program was not only useful but desired by our community. IP, and in particular, patents, are not a well understood field by the typical researcher or for that matter, typical individual. Everyone knows that a patent gives the inventor/assignee rights but how to enforce these rights is not understood. It is common knowledge that the patent process takes a long time, but what is involved in getting a patent is less clear.

We had a core group of 10-12 people who attended all three weeks of the workshop series. This group was highly engaged, actively asking questions through the series. The overall feedback was very positive for each session. We received several excellent suggestions (e.g. use one or more of the same cases studies through all the sessions; extend the practice time; continue with more advanced training; show examples of different types of patents, etc.). Since this was our first attempt at providing a cohesive program, this feedback will be incorporated into the next workshop series. We will also do a pre-assessment survey before the next series to ascertain where we should focus our training efforts.

Most of the improvements suggested were minor things such as slide font size or colors used. We plan on following up with the core participants this summer to see if and/or how these workshops changed the way they approach their research. Using the results from this assessment will also allow us to adapt our next training series to better meet the researchers' needs.

Reflections and Conclusions

Since developing patentable products and technologies is a major goal of the university, it is critically important that we have a community that is aware of the entire "research to patent" process.

Just as librarians play a major role in developing information literacy (IL) skills, science librarians can play an important role in developing IP literacy. IP literacy provides an opportunity for librarians to connect with the appropriate campus departments and develop programs that meet the needs of their communities. Recently the TTO had an invited speaker, a former director of Technology Transfer (TT) from a prestigious US university, talk about the commercialization of academic research. One of the points he made is that for a successful TT model of commercialization, there is a need to change the culture, to train faculty to start identifying useful inventions from research. This is what our collaboration has started to do here at KAUST.

While I knew that we had a need to better educate our community on the research to patent process, I had not realized how hungry our researchers are for this type of training. And while I knew that the TTO used our patent resources, the needs of the OSR for this training was something I had not considered until meeting Dr. Payumo. The original idea of this training series was to educate our community about IP and the resources available. Each of our departments helped our community with our expertise, but in isolation from each other. By working together, we were able to create a

program that fits all the pieces of the research to patent puzzle together providing a foundation and understanding of the entire process. In addition, we were able to learn from one another, gain a greater understanding of the needs and problems faced by not only our own departments, but also of our research community.

We achieved our goal of raising awareness of IP and its place in scientific and academic research. We showcased the many resources available to our community. We tapped into an unspoken need of our researchers who want to promote and protect their research but did not know how to pull it all together. So, our next steps are to take our workshop series and refine what worked, incorporate the suggestions, and fix what needs improving into the next series to be held in the fall of 2016. We are also writing a proposal to hold the workshop series during our Winter Enrichment Program (WEP) during January 2017. If the WEP proposal is accepted, we will enhance the program by bringing in patent search specialists to provide advanced patent search training in specific areas such as chemistry and plant patents.

This workshop series took a lot of time (over 2 years) and effort to pull together. It has been a true collaborative effort with each one of us bringing our particular expertise into play, facilitating and enhancing the training done by the each of the other members. Together we make a positive difference!

Reference

Murphy, Caryle. *"Saudi Arabia's Youth and the Kingdom's Future"*. February 7, 2012. Woodrow Wilson International Center for Scholars' Environmental Change and Security Program. *Retrieved 19 April 2016. URL: https://www.wilsoncenter.org/sites/default/files/Saudi%20Arabia%E2%80%99s%20Youth%20and%20 the%20Kingdom%E2%80%99s%20Future%20FINAL.pdf*